Answers to Review Panel Questions

Rockville, MD

28 April 2009

www.vacet.org

Timelines for Future Development and Deployment – What are Milestones

- See attached MS Word document (6 pages).

Does your plan support the future sustainability of VisIt?

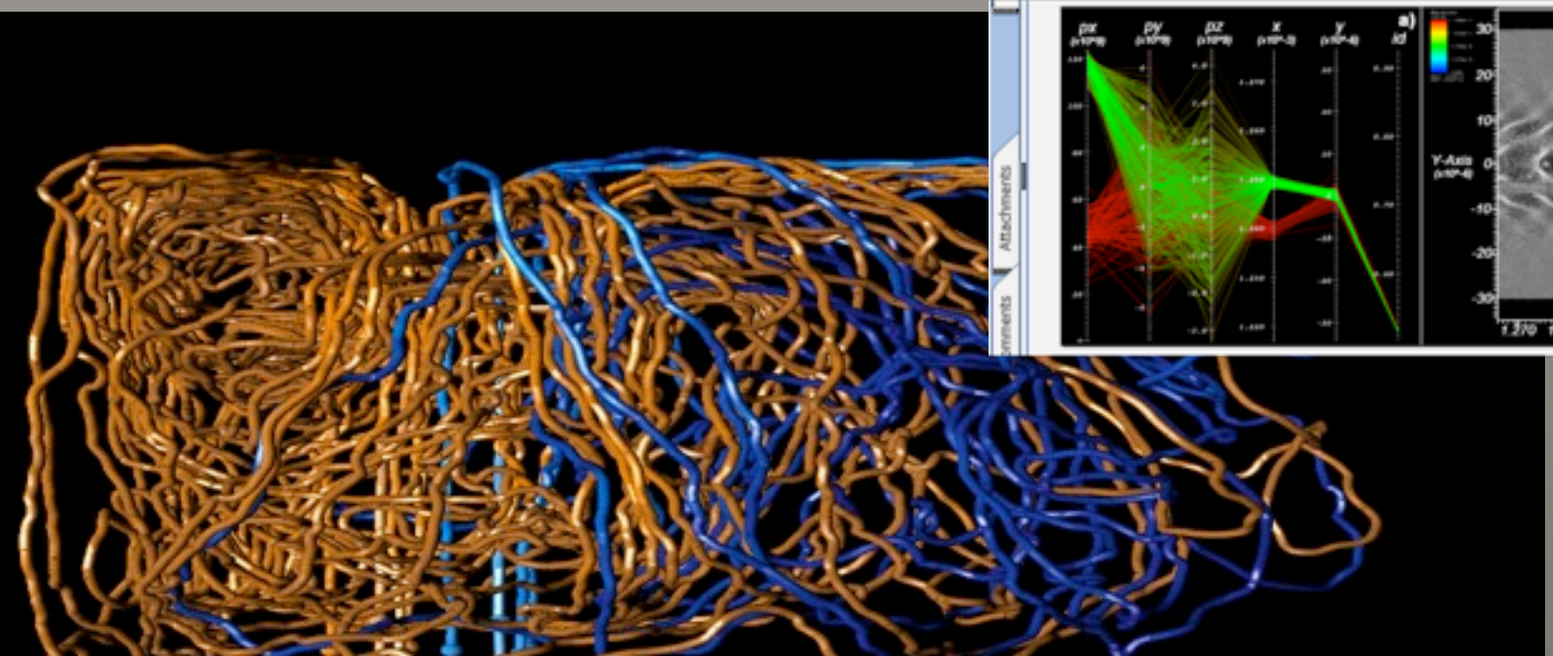
- Production software: bug tracking, regression testing, regular releases
- Through our efforts, VisIt now feels much more like an open source project:
  - Transitioned software repository from being "trapped at LLNL" to publicly accessible.
    - ~25 developers with write access from 9 institutions
  - Public mailing lists, archived and searchable.
    - ~300 subscribers, get ~300 posts per month
  - Wiki pages on usage and development.

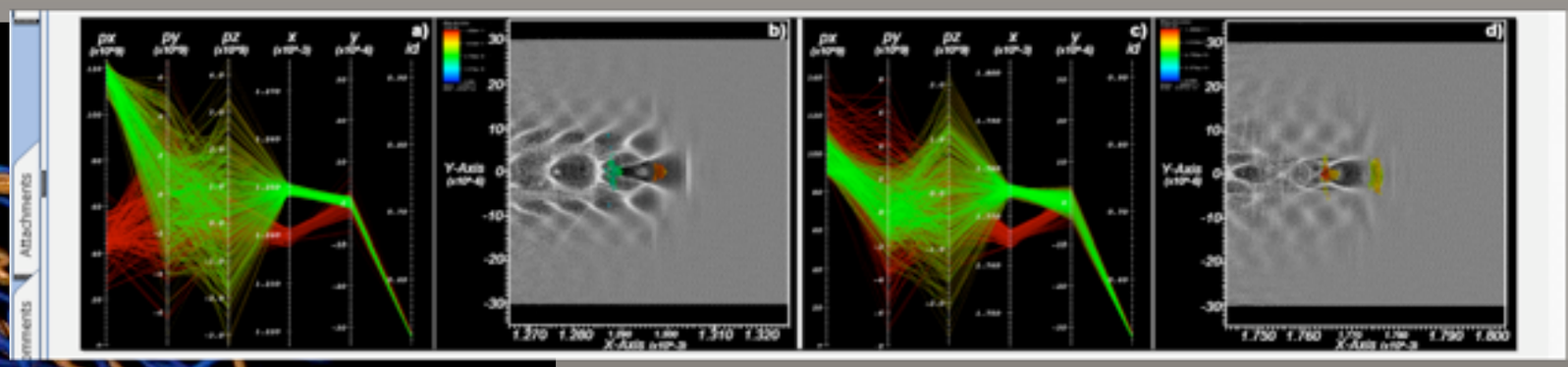





Does your plan support the future sustainability of VisIt?

- VisIt has two focal points:
  - End user tool
  - Big data
- Our activities are playing to this base
  - Working on customizability (end user tool)
  - Many big data/performance enhancements





SciDAC
Scientific Discovery through Advanced Computing

Are you on a path to a stable open source community?

- Short answer: we think yes
- Long answer: projects like this require ongoing funding. Chris will address this more.

Are you on a path to a stable open source community?

- Open source development costs money, all costs incurred in maintaining a project fall into one of two broad categories:
  - Infrastructure costs: the cost of making the project and its outputs available
  - Support costs: the cost of supporting users and contributors, including the writing and maintenance of documentation
  - Development costs: the cost of maintaining the infrastructure, the software
  - Governance costs: the cost of managing and protecting the IP in the software

http://wiki.oss-watch.ac.uk/Cost_Of_Open_Source_Development

What is the process for submitting contributions to VisIt?

article | discussion | edit | history

JoinTheTeam

Interested in joining the VisIt team? Here's some steps along the way.

- Getting access to the Subversion repository
- Getting access to the VisIt developers mailing list
- Getting an account to modify the Wiki
- A one time change to the repository for new developers (**note this step is a good orientation for your first checkin**)
- Check out the other pages on this wiki! ... there are good pages on:
  - How to use SVN
  - Coding style
  - The design of VisIt
  - ... and a lot more on the main developer documentation page

Category: Developer documentation

What is the process for submitting contributions to VisIt?

article | discussion | edit | history

GettingSVNAccess

Our Subversion repository is hosted by NERSC at Lawrence Berkeley Lab. Here's how you get access:

1. Send a note to Hank Childs (childs3 at llnl dot gov) indicating you would like to be in the repository.
2. Hank will then submit a webform to NERSC requesting you get added.
3. After this happens, you will need to get the form here. Print out the form, fill it out and fax it in.
4. You should get a notice from the NERSC folks letting you know when the account is ready.
5. This sets up an account at NERSC. Sometimes they automatically set up an account on svn.nersc.gov to go with it. If not, ping Hank and he will coordinate with them.

Categories: Developer documentation | Software Engineering

How does VisIt perform compared to other tools, size of problem, interactivity, unique features?

- We think well.
- Size of problem:
  - We're looking at the biggest data sets in the world. (?)
  - Anecdotal:
    - TACC, Argonne, LANL
- Interactivity:
  - Huge amount of effort to get over "VTK hump"
  - Rendering has been less of a focus (ICE-T!)
  - Contract-based mechanism is key
- Unique features:
  - Yes

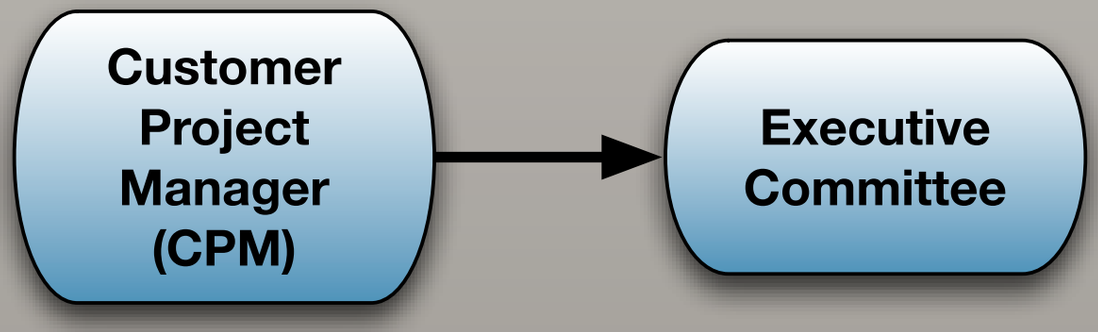
How does basic research activity focus on petascale issues?

- We *have* basic research at the petascale:
  - Streamlines, Pathlines, etc.
  - FastBit – QDV, optimized I/O
  - Tuvok (V.R. in a distributed memory fashion)
  - Future: multiresolution methods, in-situ

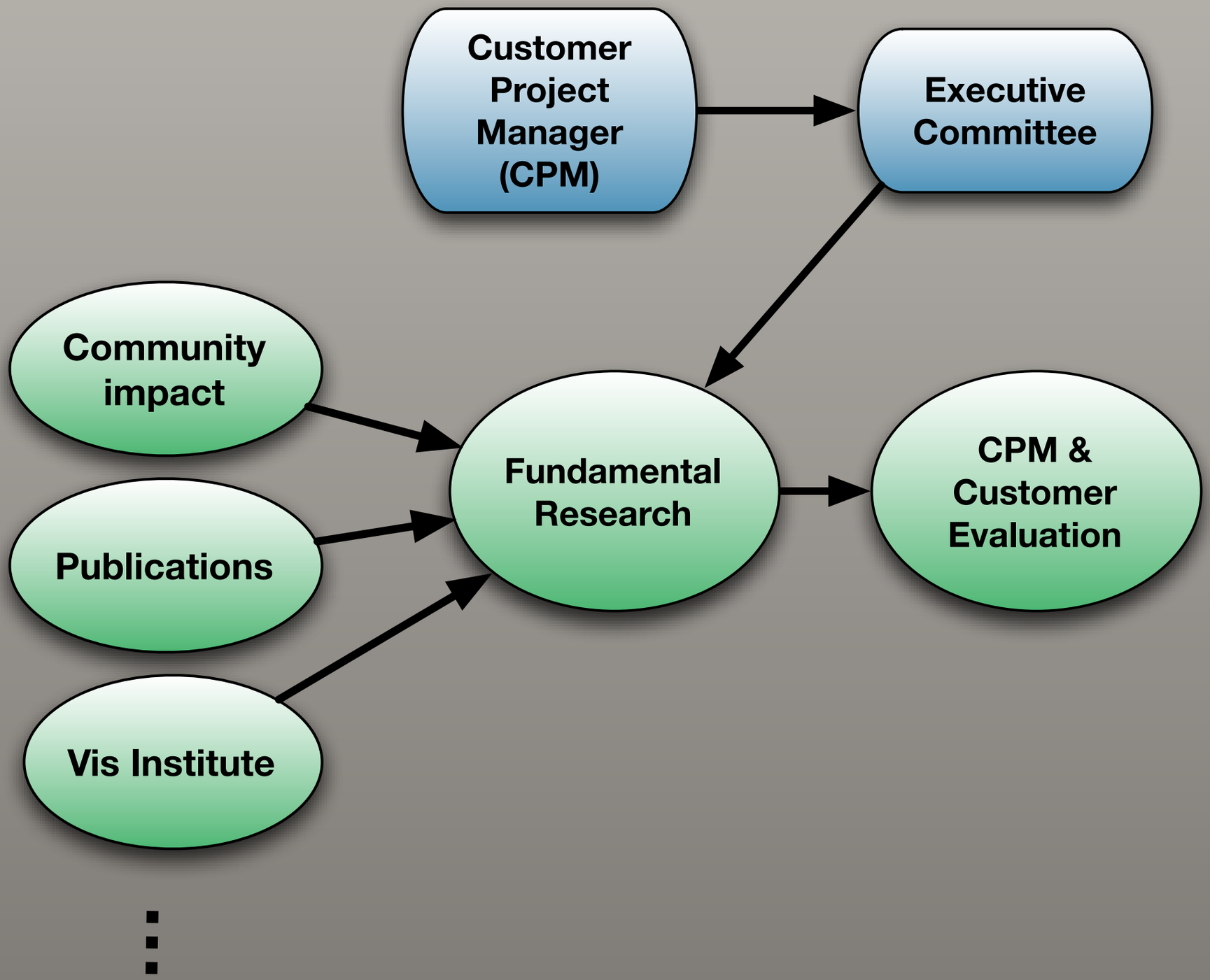
- We focus on our stakeholder needs
  - petascale comes naturally with this effort as customers hit the petascale

What's the process for transitioning research into software?

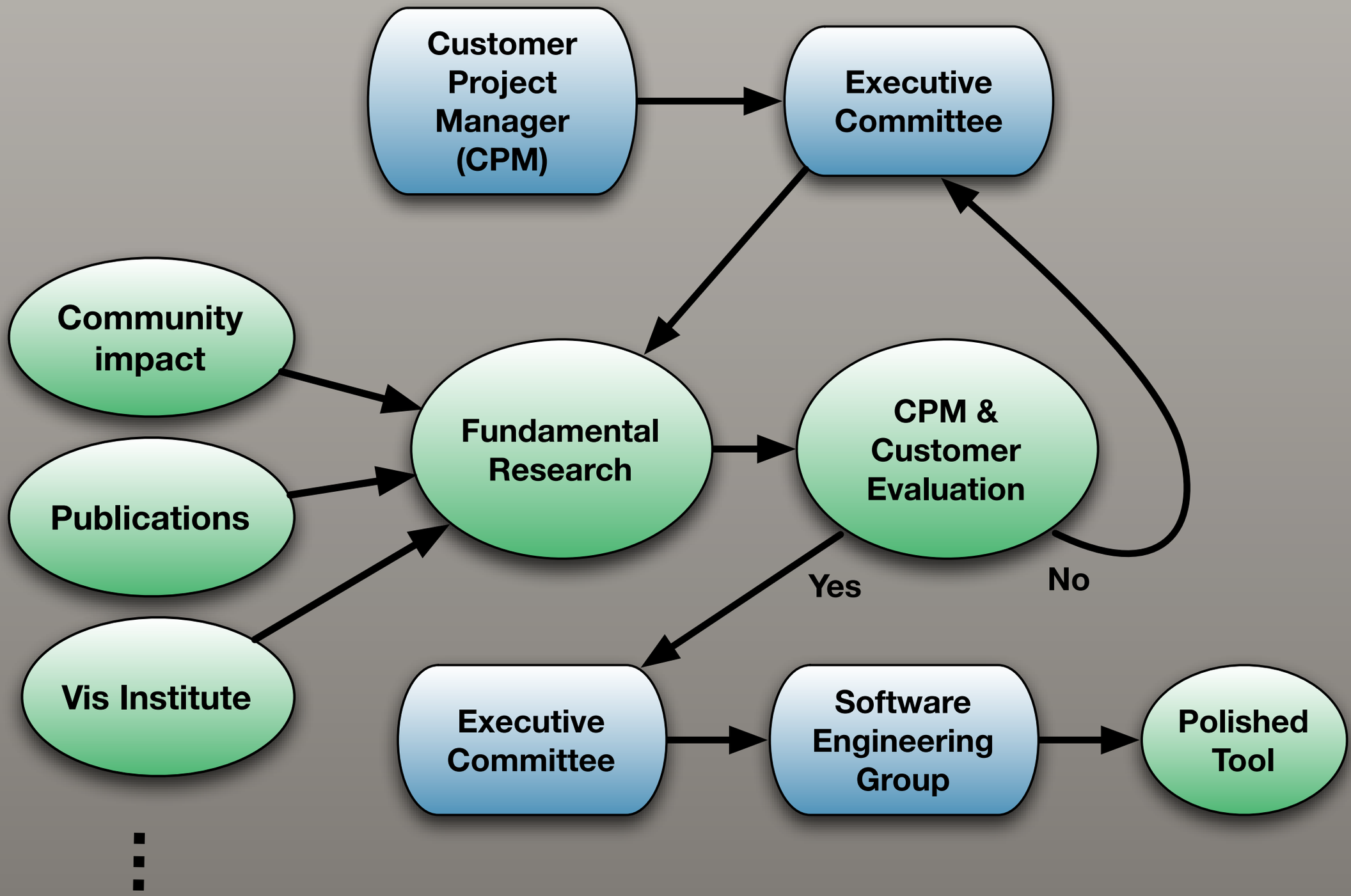
What's the process for transitioning research into software?



What's the process for transitioning research into software?



What's the process for transitioning research into software?



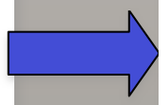
What's the process for transitioning research into software?

What's the process for transitioning research into software?

Customers :
"VisIt is bad at streamlines"

What's the process for transitioning research into software?

Customers : "VisIt is bad at streamlines"



"We need parallel streamlines" / "Wow! Parallel streamlines is hard"

What's the process for transitioning research into software?

Customers : "VisIt is bad at streamlines"

"We need parallel streamlines" / "Wow! Parallel streamlines is hard"

Research effort: Efficient parallel streamline generation


What's the process for transitioning research into software?

Customers : "VisIt is bad at streamlines"

"We need parallel streamlines" / "Wow! Parallel streamlines is hard"

Research effort: Efficient parallel streamline generation

Scalable Computation of Streamlines and Pathlines on Very Large Datasets *

Dave Pugmire, Oak Ridge National Laboratory, PO Box 2008 MS6016, Oak Ridge, TN 37831-6016, pugmire@ornl.gov

Christoph Garth, University of California, Davis, One Shields Road, Davis, CA, 95616, cgarth@ucdavis.edu

Hank Childs, Lawrence Livermore National Laboratory, 7000 East Avenue, Livermore, CA, 94550, childs3@llnl.gov

Sean Ahern, Oak Ridge National Laboratory, PO Box 2008 MS6016, Oak Ridge, TN 37831-6016, ahern@ornl.gov

Gunther Weber, Lawrence Berkeley National Laboratory, One Cyclotron Road, Berkeley, CA, 94701, ghweber@lbl.gov

ABSTRACT

Keywords

1. INTRODUCTION

U.S. DEPARTMENT OF ENERGY | Office of Science

SciDAC
Scientific Discovery through Advanced Computing

What's the process for transitioning research into software?

Customers : "VisIt is bad at streamlines"

"We need parallel streamlines" / "Wow! Parallel streamlines is hard"

Research effort: Efficient parallel streamline generation

Deployment effort in VisIt by SEG

SC Portland, OR 2009

U.S. DEPARTMENT OF ENERGY | Office of Science

SciDAC Scientific Discovery through Advanced Computing

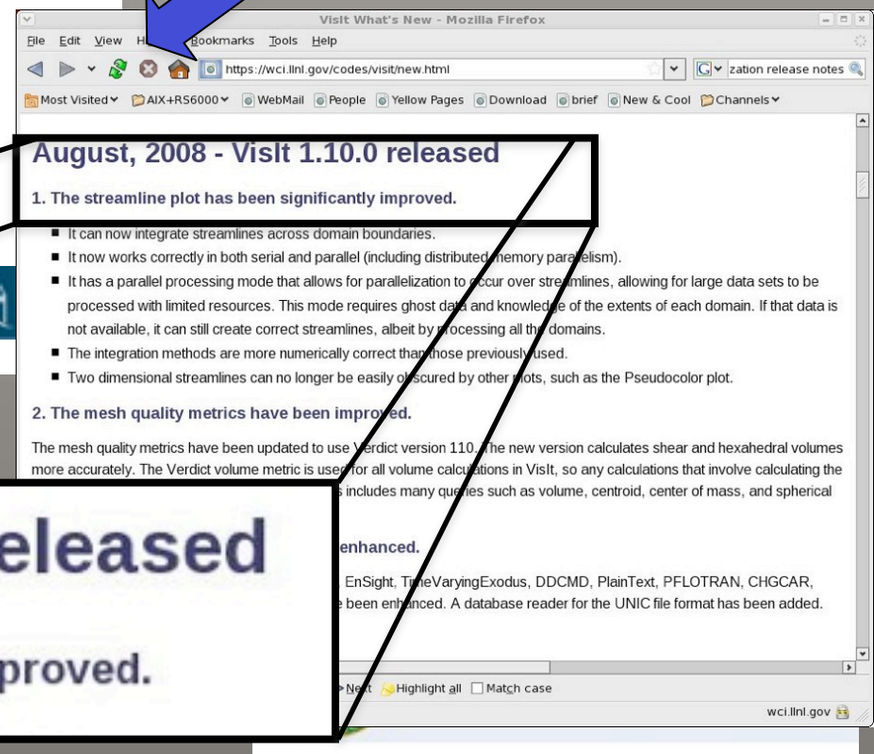
What's the process for transitioning research into software?

Customers : "VisIt is bad at streamlines"

"We need parallel streamlines" / "Wow! Parallel streamlines is hard"

Research effort: Efficient parallel streamline generation

Deployment effort in VisIt by SEG



August, 2008 - VisIt 1.10.0 released

1. The streamline plot has been significantly improved.

U.S. DEPARTMENT OF ENERGY

Relationship with IUSV

- Shared/collaborative activities
  - Research
    - GPU bin-hash indexing
    - Distributed memory GPU raytracing
    - VLI integration with VisIt (distributed memory query-driven visualization application)
    - Temporal pattern matching using a textual language
  - Outreach
    - Workshops: SC (speakers and co-chairs), Feature Extraction and Tracking 2007
  - Proposals
    - Pascucci/Ma: large scale combustion data analysis.
- Potential source of technology for use in VACET products
- The Science Application Partnership is the formal mechanism for officially enabling such an activity.